kidneys; whereas glucose can be destroyed in certain proportions.

3. Cane-sugar would be beneficial to a certain extent; as when taken into the intestine it is in part at least transformed into glucose; but if given in too large proportions to be thus completely transformed, the disease would be probably aggravated by the presence in the blood, and subsequent excretion by the kidneys, of the former variety of sugar.

4. The glucose should be given in moderate quantities at a time, and frequently, rather than in large quantities at long intervals; because, when much sugar is taken fasting, it is absorbed too quickly to admit of its complete destruction in the liver, and it passes into the general circulation, whence it is eliminated in the urine.

TOPOGRAPHY AND CLIMATE OF LLANDUDNO, NORTH WALES.

By T. C. RODEN, F.R.C.S.

LLANDUDNO, as the guide-books inform us, stands on an arm of land about four miles in length, jutting out towards the west from the mainland of North Wales at Conway. This little peninsula is terminated by a huge limestone rock, seven miles in circumference, and 750 feet in height—the Great Orme's Head—under and along the south side of which the town is built. About a couple of miles in front—that is, to the south—runs a chain of hills from the Little Orme's Head on the east towards Conway bay on the west; while a beautiful semicircular sweep of the ground between the two Ormes encloses the waters of Llandudno bay. It is chiefly this peculiar formation of the locality which impresses it with distinctive qualities, beneficial to particular classes of invalids; while the general mildness, dryness, and salubrity of the air render it an agreeable place of resort to all. From the experience of a residence of three years, I am enabled to designate the climate as mild, yet bracing, and remarkably free from humidity.

It is generally supposed by strangers that the coast of North Wales is cold and bleak; and many who visit this spot find it difficult to account for the opposite state of the case with regard to Llandudno. The shelter afforded by the Great Orme's Head from the north and north-east winds, together with the peninsular form of the site, afford the true explanation of the fact; for, being embraced on three sides by the sea, the temperature becomes more equalised. In winter, the water being warmer than the air, imparts a portion of its caloric to the atmosphere; while in summer the phenomena are reversed. The Gulf Stream, too, passing the south coast of Ireland, probably produces no unimportant share in the result.

These circumstances will make intelligible the quality of mildness, which is most striking in the winter months; so much so is this the case, that there are few points on the British coast so well fitted for the abode of invalids in winter as this. The thermometer fully bears out this statement; for my observations of it, noted regularly during two years, prove that the temperature is milder by 10° or 15° in severe weather, than in several situations in England with which I have compared it; and the contrast is the greater the more intense the cold.

It might naturally be expected, therefore, that in summer the heat would be more oppressive here than elsewhere. That it is not so, one or two facts will serve to show. The range of hills to the south, before alluded to, and the mountain on the north, bound a valley, along which the westerly winds (which generally prevail), cooled by the sea over which they sweep, pass in a grateful and refreshing current, and produce, together with the refrigerating influence of the volumes of water around, a temperature certainly not higher than that of other places, and lower than many. To substantiate this, I need only mention that from observations taken at the telegraph station on the mountain (at an altitude seven hundred feet above the level of the sea) during the hot weather of last summer, it appeared that the thermometer was usually about 5° higher than in the town below.

From what has already been said, it will excite no surprise that within the space of a square mile Llandudno should possess two or three varieties of climate. That part of the valley exposed more directly to the action of the winds is cooler in the summer, and in the winter is so bracing as to lead few to prefer it; at the foot of the Great Orme the temperature is mild at all seasons; while on the mountain side that delicious atmosphere emphatically called "mountain air" gives life and

strength to the system. The variations are not so trivial as might be imagined, but are well marked, and are severally adapted to the constitutions and requirements of different individuals. Invalids may therefore select a residence suited to their respective cases during any and every part of the year—either completely sheltered, or more or less open to bracing influences.

It is, however, to the advantages of the place as a winter residence, as not being generally understood, that I would particularly direct attention. The beauties of the scenery, the extraordinary opportunities for sea-bathing at all states of the tide, the purity and salubrity of the air, the facility of reaching all points of interest in North Wales, as well as of access to England, are already well known; but comparatively few have enabled themselves to judge of the climate from a sufficiently long residence. Visitors generally have been content to enjoy the pleasures of the scene for a time in the summer, and have probably felt a sort of compassion for those destined to spend the cold season, as they imagine, on these inclement and inhospitable shores. Far different, however, is the case of those who commit themselves to a Llandudno winter. The charms of its bright and sunny skies, clear and exhilarating air, and genial temperature—the advantages of its freedom from damp, fog, and continuous rain, and from the intense cold of most situations in northern latitudes, render it for the most part unnecessary to expatriate the weakly in health and constitution, or to seek abroad for conditions which may be ensured at home.

For the victims of dyspepsia, of rheumatism even in its severest instances, of phthisis and the various forms of pulmonary and bronchial disease, as well as for that large class of persons technically termed "delicate", the winter climate of Llandudno is admirably adapted. Several such who have, within the last few years, taken up their abode here, have experienced great benefit, and have in a remarkable degree recovered their health. Scarcely for a day throughout the year need the valetudinarian keep within doors, or refrain from that exercise in the open air so essential for the maintenance or restoration of health.

I submit, then, that these facts incontestably prove that this new watering-place is a valuable addition to the hygienic resources of the profession, as supplying a desideratum long sought for, too often perhaps on foreign shores, and certainly not hitherto realised at home.

Some meteorological and local details are reserved for a future communication.

POISONING BY ALMOND FLAVOUR: RECOVERY

By HENRY W. T. ELLIS, Esq., Crowle, Bawtry.

At four o'clock in the afternoon of last Friday, I was summoned to visit immediately the wife of Mr. Frederick Chapman, a solicitor's clerk, of this place, who was said to be in a fit. On proceeding to the house, I found my patient lying on her back across the bed, in a complete state of insensibility; her countenance was ghastly; her eyes were fixed, staring, and prominent; the pupils were dilated; the jaws firmly closed; frothy mucus exuded from the mouth; the breathing was heavy and stertorous; the pulse at the wrist was scarcely perceptible, but the carotids pulsated strongly; the extremities were relaxed. Whilst noticing these symptoms, I detected the odour of hydrocyanic acid; and, on inquiry, ascertained there had been some slight vomiting of undigested meat. This at once and unmistakeably revealed the nature of the case. Of course, not a moment was to be lost; cold affusion was therefore instantly and vigorously had recourse to, followed up by ammonia to the nostrils, and its application with camphor liniment to the chest, and with mustard to the legs. These means were persisted in for about two hours, with but slight change in the symptoms. At the end of that time, however, there were convulsive twitchings, rolling of the eyeballs, etc. In another hour, the patient became delirious, tossing herself wildly about, but gradually subsiding into sleep. Twenty leeches were in the meantime applied to the head, and warmth to the extremities (previously quite cold). Emetics and the stomach-pump were at hand, but could not be used: in fact, from the time that had elapsed before I saw her (ten to fifteen minutes after swallowing the poison), it is doubtful whether they could have been of any avail, absorption taking place so rapidly.

The case has since gone on well, the only drawback being erysipelas of the face and scalp, attributable, probably, to the leech-bites.

It appears essence of pennyroyal was sent for, but the druggist's apprentice, by mistake, put in the bottle essence of bitter almonds. By a most fortunate accident, a portion of this was spilled in mixing it with warm water and sugar. Two or three drachms were swallowed, which, as made here (one drachm in the ounce), would be equivalent to fifteen or twenty drops of the essential oil, seventeen drops of which have been known to kill a person in half an hour.

My object in recording this case is twofold: 1. To prove the great danger there is in retailing so deadly a poison, especially in a careless manner; and 2. To show the value of cold affusion; recovery, I cannot but think, in this instance, being mainly attributable to it.

Reviews and Notices.

THE CAUSE OF THE COAGULATION OF THE BLOOD: BEING THE ASTLEY COOPER PRIZE ESSAY FOR 1856, WITH ADDITIONAL OBSERVATIONS AND EXPERIMENTS; and with an APPENDIX, showing the Bearings of the Subject on Practical Medicine and Pathology. By BENJAMIN WARD RICHARDSON, M.D., Licentiate of the Royal College of Physicians of London; Physician to the Royal Infirmary for Diseases of the Chest; etc. pp. 466. London: Churchill. 1858.

This essay of Dr. Richardson affords an instructive lesson, as well as encouragement, to all who are engaged in investigating the phenomena of Nature; instruction as to the manner in which all investigations must be carried out; and encouragement in the success which has attended a patient inquiry conducted on the principles of inductive philosophy. Not that the author has by any means exhausted his subject—far from even attempting such a task, he has left much to be worked out by physiologists who labour in the same spirit with himself; but this he has done—he has placed our positive knowledge of the essential cause of the coagulation of the blood on a basis so firm, that it must be the groundwork of future inquiries into the various changes undergone by the circulating fluid.

The essay on the Cause of the Coagulation of the Blood consists of eight chapters.

Chapter I contains Historical Memoranda on the Supposed Causes of Coagulation of the Blood. The phenomenon is here shown to have been supposed, by the philosophers of ancient Greece, to be connected with the presence of a "network or fibre" in the blood. Subsequently, little or nothing seems to have been done in the way of attempting an explanation until after the time of Harvey; but, since that period, a number of theories and hypotheses have been put forward. The history of each of these is given under the several heads of temperature; exposure to the air; rest and motion; vital force; nervous influence; chemical hypotheses; effects of electricity and galvanism; physical interchanges in the constituents of the blood; specific gravity; and other circumstances relating to coagulation. In this chapter, the author also notices several hypotheses held with regard to the formation of the buffy coat, and refers to the observations which have been made on the state of the blood as found in the body after death, and on the formation of coagula in the living body.

Chapter II consists of a critical examination of the theories already enumerated. That fibrine is essential to the process of coagulation, is sufficiently established both by positive and by negative evidence; and hence, in the words of the author, "whatever may solve the problem of the cause of the aggregation of the fibrine, solves at the same time, of necessity, the cause of the phenomenon altogether—at least, as far as we can at present foresee." This supposition we shall see to be quite correct, before arriving at the end of the book.

In searching whether any among the theories will sufficiently explain the cause of coagulation, Dr. Richardson first examines the observations made on the effects of temperature. Increase

of temperature favours coagulation; decrease retards or even prevents it. Yet the effects of temperature, in common with those of exposure to the air, afford no satisfactory explanation of the phenomenon; while at the same time they agree with any hypothesis which may ascribe coagulation to the evolution of gas from the blood.

The theory of rest as the cause of coagulation, while it is supported by such facts as the formation of fibrinous concretions when the circulation is impeded, and the suspension of coagulation by agitation of the blood in a closed vessel, is yet negatived by several strong objections, especially that derived from the fact brought out by Hewson—that blood retained in a state of rest within a vein coagulates very slowly.

On the supposed connexion of the vital force with coagulation, we quote some passages from the author's comments—warning some of our readers, however, that they are likely to find something here which may shock their veneration. But, after all, we are very much inclined to agree with the author in his criticism of the vital force hypothesis, which it would be scarcely inappropriate to call the *physiological* "refuge for the destitute."

"If writers", says Dr. Richardson, "who speak of a vital force, could define what they mean by the term, or could even agree to a kind of hypothetical definition, we might be able to treat more satisfactorily of this hypothesis. Or if, in using the term 'vital principle or force', they would rest content to let it stand to express, in a general sense, the aggregate of all the phenomena observed in the living body; or if they would only use the term to explain any operation, whether chemical or physical, which occurs in the body, simply because it does occur in it; if these definitions were admitted, there would be fewer difficulties in the way. But so far is this from being the case, that we find even those who speak of the vital principle in connexion with coagulation, assigning to it two distinct and directly opposite functions. Mr. Hunter held the vital principle, *i.e.*, its presence, to be the cause of coagulation; for he compares the change that occurs in the blood removed from the body, to certain transformations or changes which occur to it in the body during life. On the opposite principle, the older physiologists thought that the living blood was retained in a state of fluidity by the presence of the vital force, and that the act of coagulation, in blood at rest, arose purely from the loss of the vitality which ensued upon its removal from the living structures. . . . Whenever a very hard and peculiar problem relating to organised structures has to be solved, writers are apt, in a dilemma, to beg the question by referring the cause of the phenomenon to the 'vital principle' as to an entity, or ruling force, which, being vital, is open to any definition, or to none. It is clear, however, that to bring a problem to such an ultimatum as this, is merely equivalent to saying that nothing is or can be known about it. . . .

"In relation to coagulation of the blood, the vital hypothesis is entirely disproved; nay, it would never have been advanced but for the coincidence that the phenomenon occurs in blood newly drawn, and without man's interference. . . . Hewson, Hunter, John Davy, and others, have frozen blood, and have kept it, thus frozen, from coagulating. They have then thawed the frozen mass, and the fluid has thereupon coagulated. Does the coagulation of blood that has been frozen (and even frozen and thawed three times successively) depend on the presence of vitality, or on the loss of vitality?" (pp. 45-8.)

In commenting on the *chemical theories*, Dr. Richardson shows that no conclusion can be drawn from the observations made by Blake and other experimentalists, who added to blood a number of substances either altogether foreign to it, or, if existing in it, in quantities far removed from the natural standard. The most practical points which have been brought out by chemical experiment on coagulation are the following; which, after all, do not help us more than a short way (if at all) out of our difficulty.

"1. The alkalies, potash and soda, dissolve fibrine, and, added to newly drawn blood, hold it fluid. 2. Several salts, such as the chlorides of potassium, sodium, and ammonium, added in free quantities to blood, sustain fluidity. 3. The evidence in favour of the extrication of carbonic acid from